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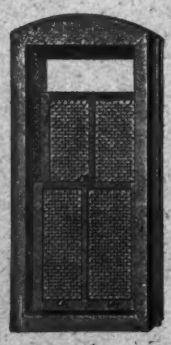

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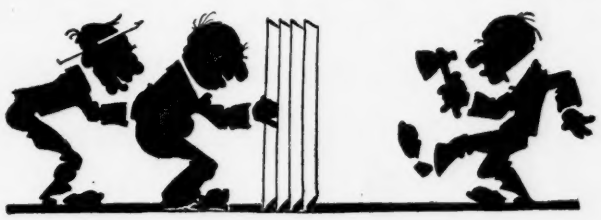

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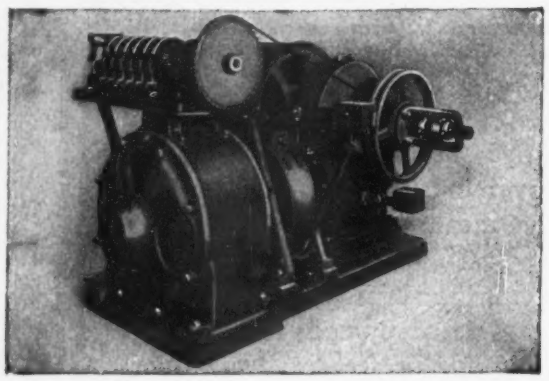

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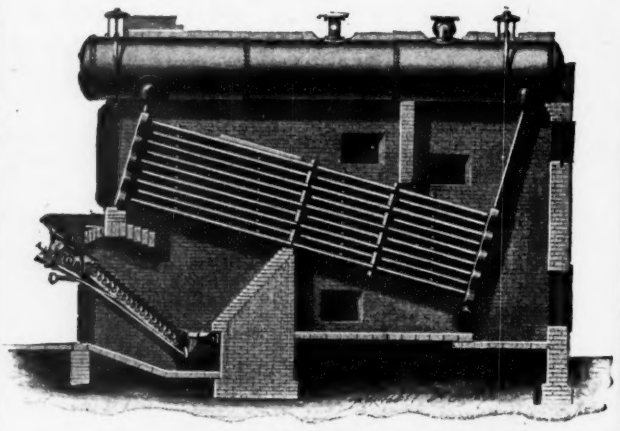

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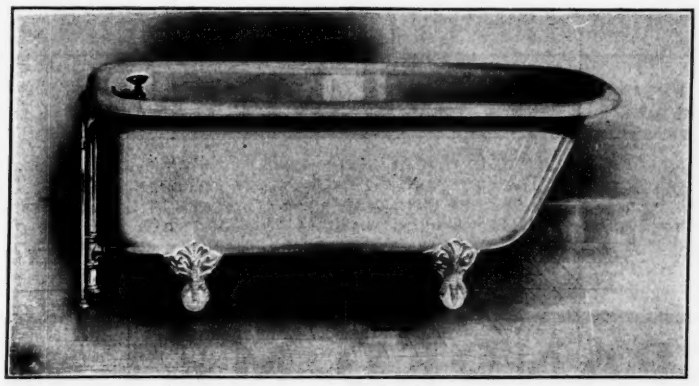

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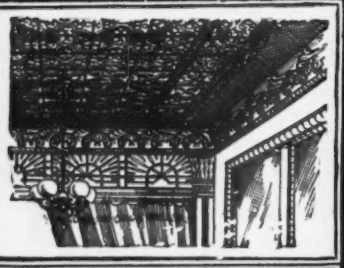

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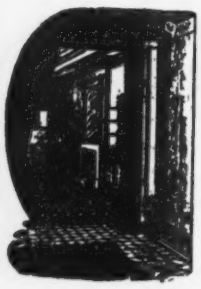

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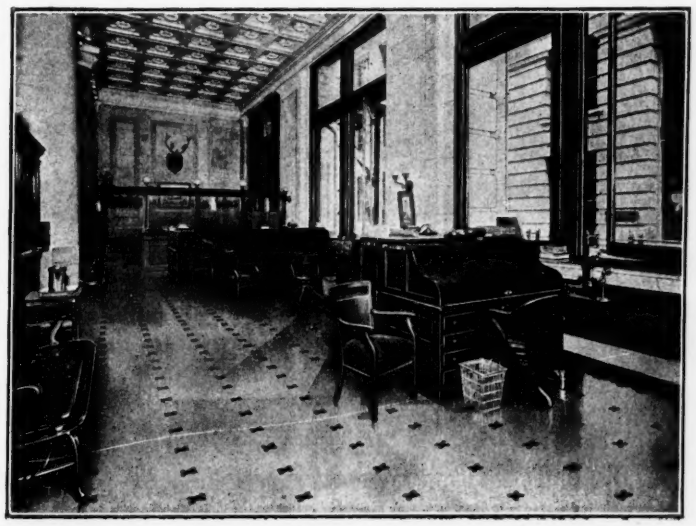

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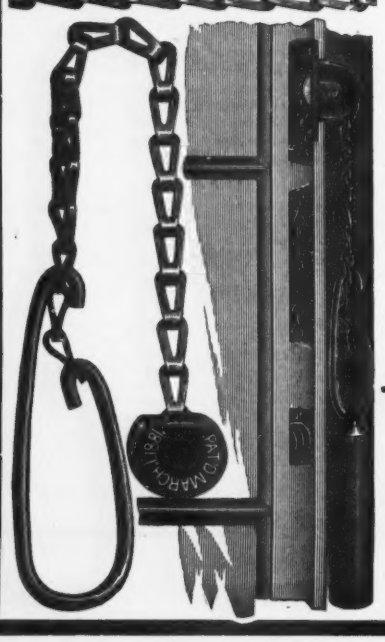

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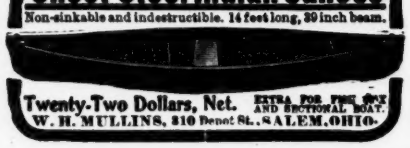

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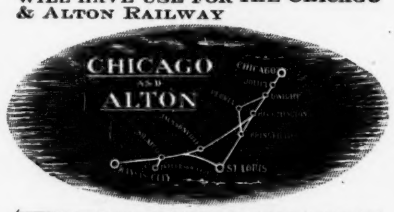

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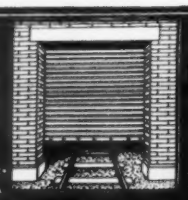

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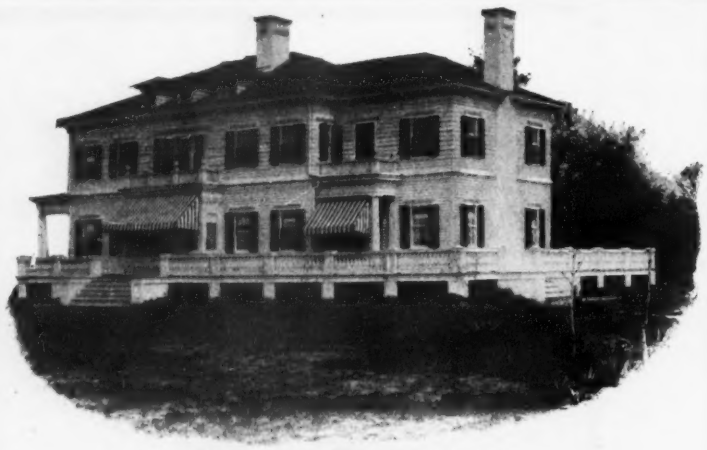

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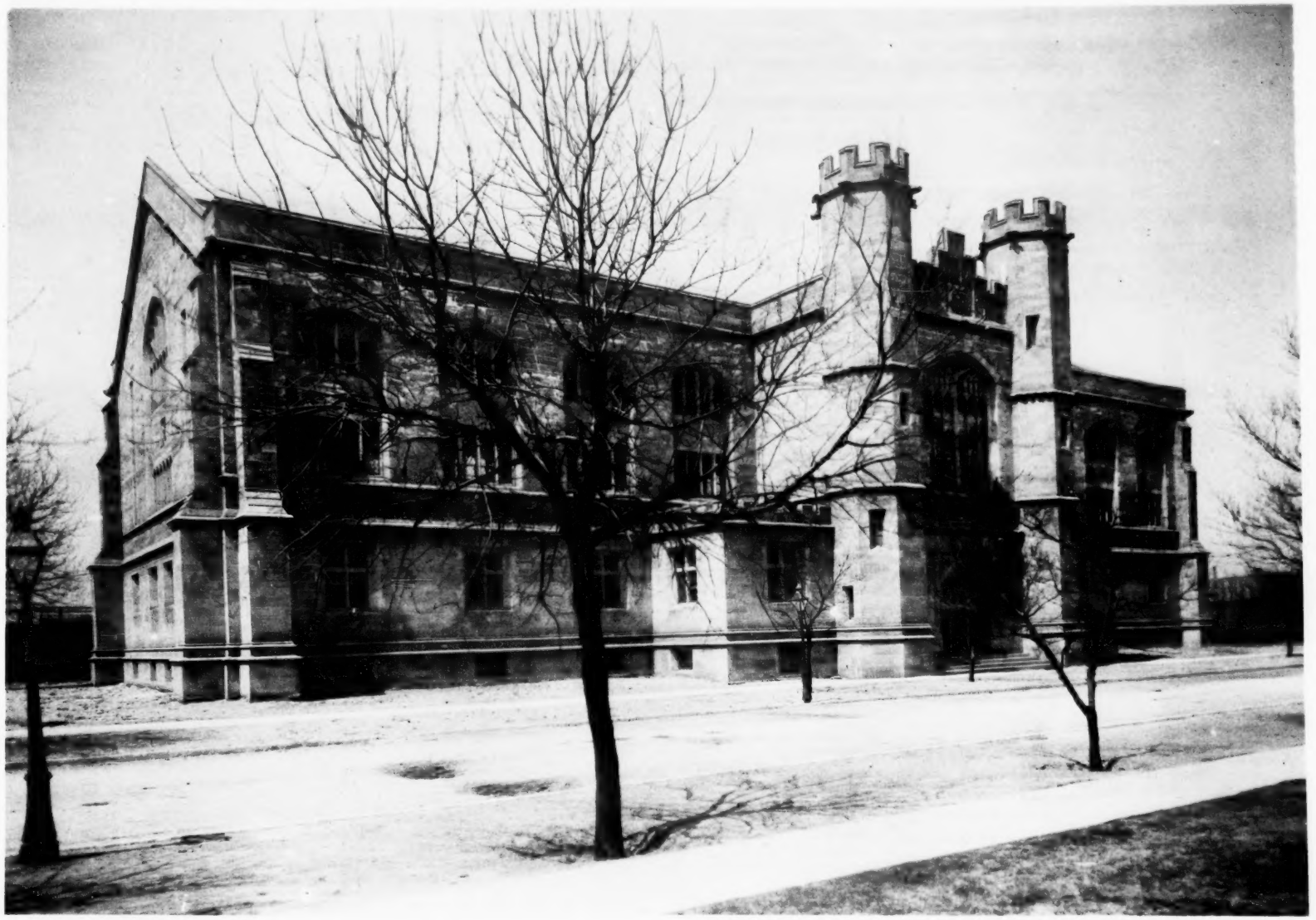
The Toronto Fire from a Fireproof Standpoint.

The trinity of casualties that is supposed to belong exclusively to railroads has apparently extended to fires in large cities. This year, before the expiration of the first four months, the loss by fire is greater than any year since that of the Chicago fire. Commencing with Baltimore, it was but a few days before the entire business section of Rochester was materially damaged, and following close upon this the wholesale section of the neighboring city of Toronto, Canada, was destroyed. While in the former cities there were some fireproofed buildings, the effect of the fire on which has been recorded, in this latter fire not a single structure of this class was within the fire zone, and there are few in the city. Canadian cities have been even slower than those on this side of the line to see the necessity for modern fireproof construction. One reason for this may be that they usually construct in a more substantial manner and trust to brick fire walls and partitions. But a substantial building is not a fireproof one, as Toronto found when the Parliament buildings burned in the eighties. At that time we called attention to this, but the building was rebuilt, perhaps more substantial than before, but without fireproof tile protection to beams and girders, and it only awaits a second combination of favorable conditions to burn again in the same old way. An examination of the ruins at Toronto showed that the long spaces between fire walls acted as horizontal chimneys in many cases, and spectators stated that often the interior of a store building was completely consumed before the roof was attacked, but, there being no protection to columns, collapse was inevitable. It seems to us that there is no better time than the present to urge the fireproofing of buildings. The innumerable instances of the value of fireproofed partitions and structure generally in confining a fire to a room or a section in a fireproofed building and saving the structure have given the public all the warning necessary in this direction, but it does not, and as an economical or commercial proposition, can not protect the contents or accessories of a building from the intense heat generated by blocks of combustible buildings surrounding it. Therefore it will pay for each owner to consider that by fireproof construction he is helping to save the locality from a general fire. If in the case of Toronto each owner, in rebuilding, constructs of steel and hollow tile, each will thus contribute a brick to the preventive wall that will make such a fire again impossible. To aid the owner in his resolution to thus save himself, the building laws should be strengthened, and in this the action of the Royal Institute of British Architects might be considered with profit. In the recommendations of its council on the London Building Acts Amendment bill of 1904, which had been requested by the London City Council to submit suggestions, several points of special importance may be noted, not the least being that of full consideration before action was taken. The council thought that great publicity should be given to the amended bill and objections heard before confirmation. The district surveyors (or building inspectors) should be practicing architects, and none should be appointed who had not been in practice seven years or assistant to an architect ten years. It was especially recommended that all buildings over forty feet in height must be of incombustible construction. With this high authority for a guidance and the late raising of insurance rates as an immediate incentive, aside from the example of what can and certainly will happen in every large city at one time or another, it seems that it will be the height of folly for Toronto or either of the other stricken cities to rebuild or general city building to continue without adding the mere twelve per cent that fireproofing costs to the general cost of the structure.



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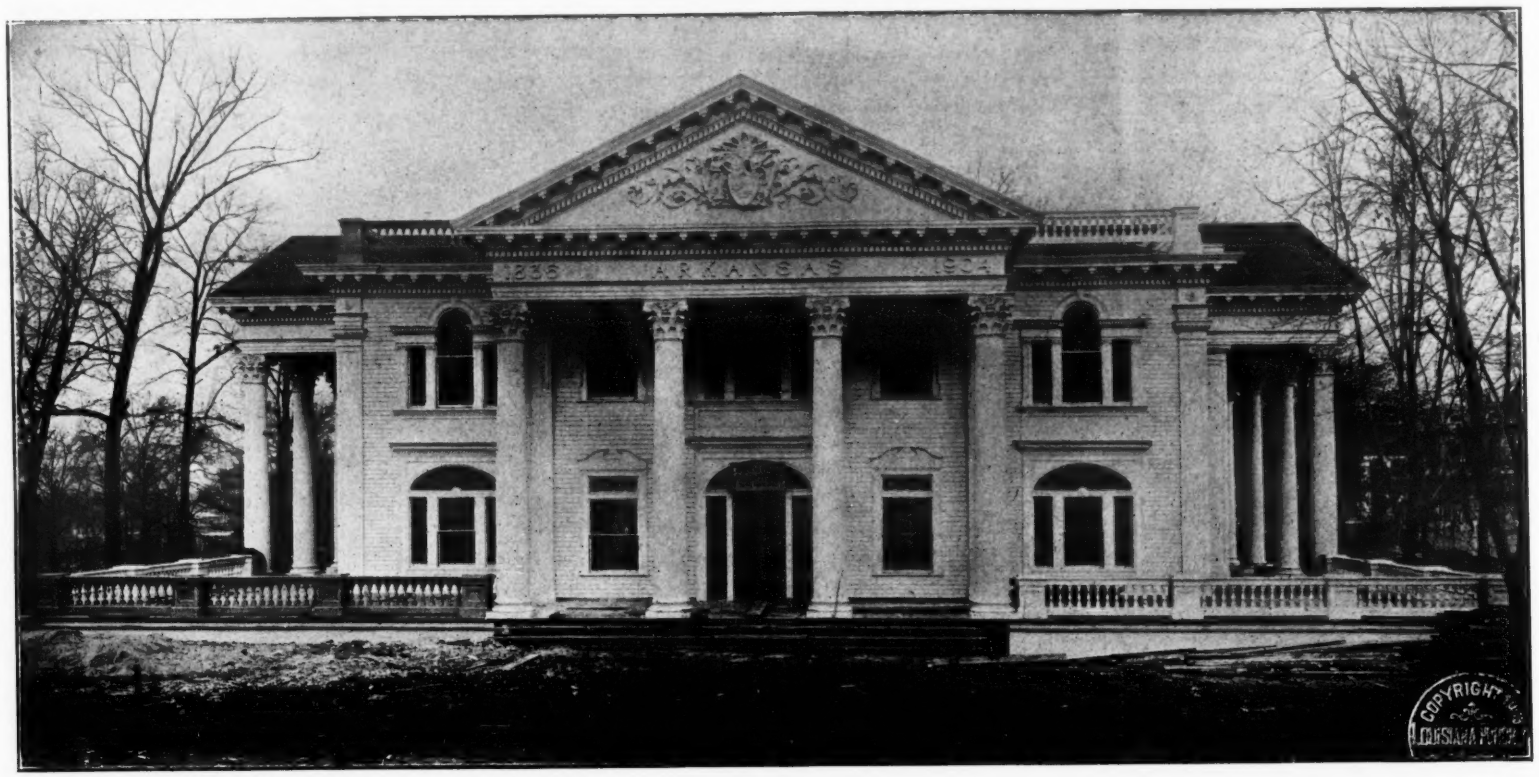

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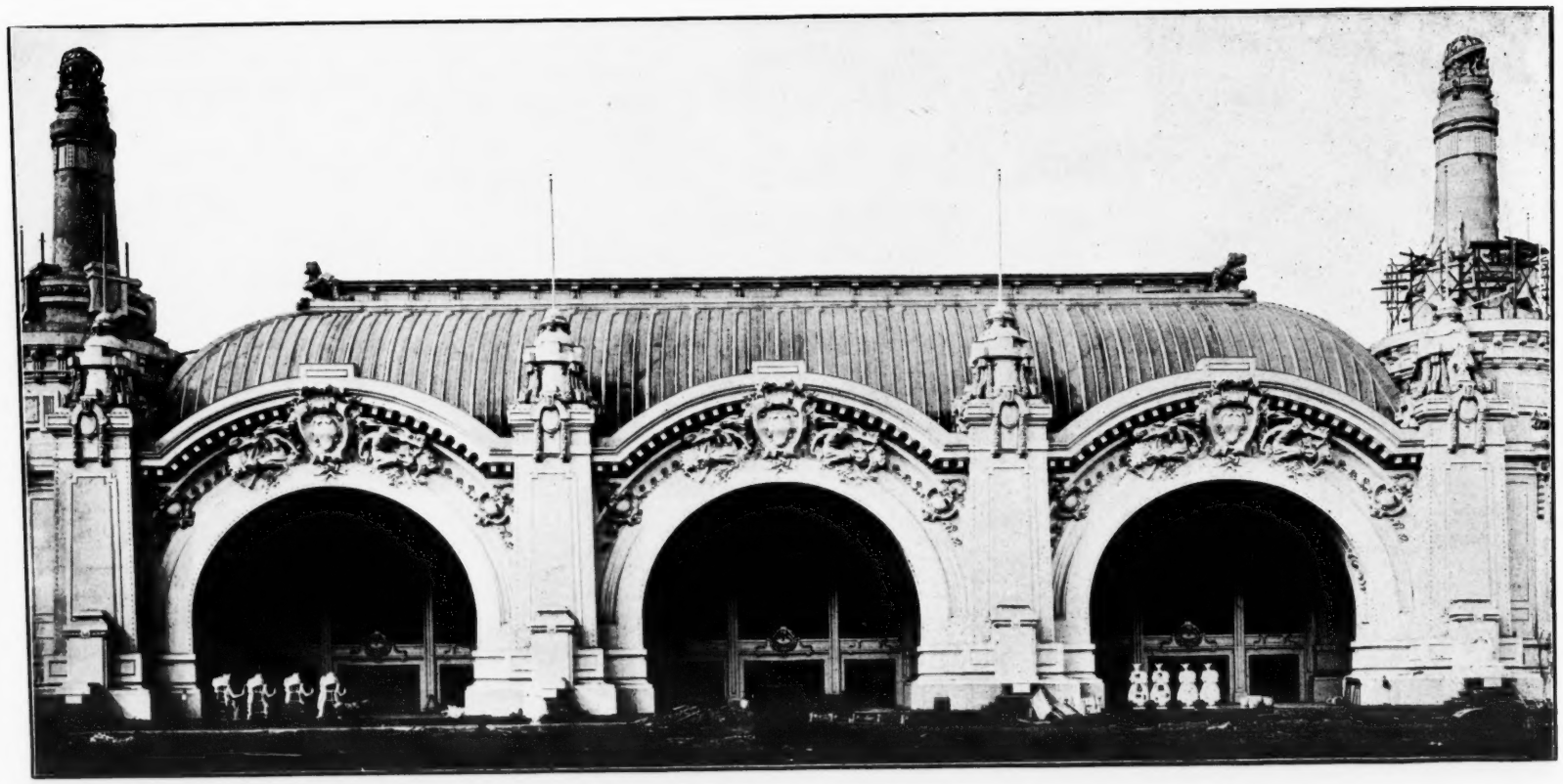

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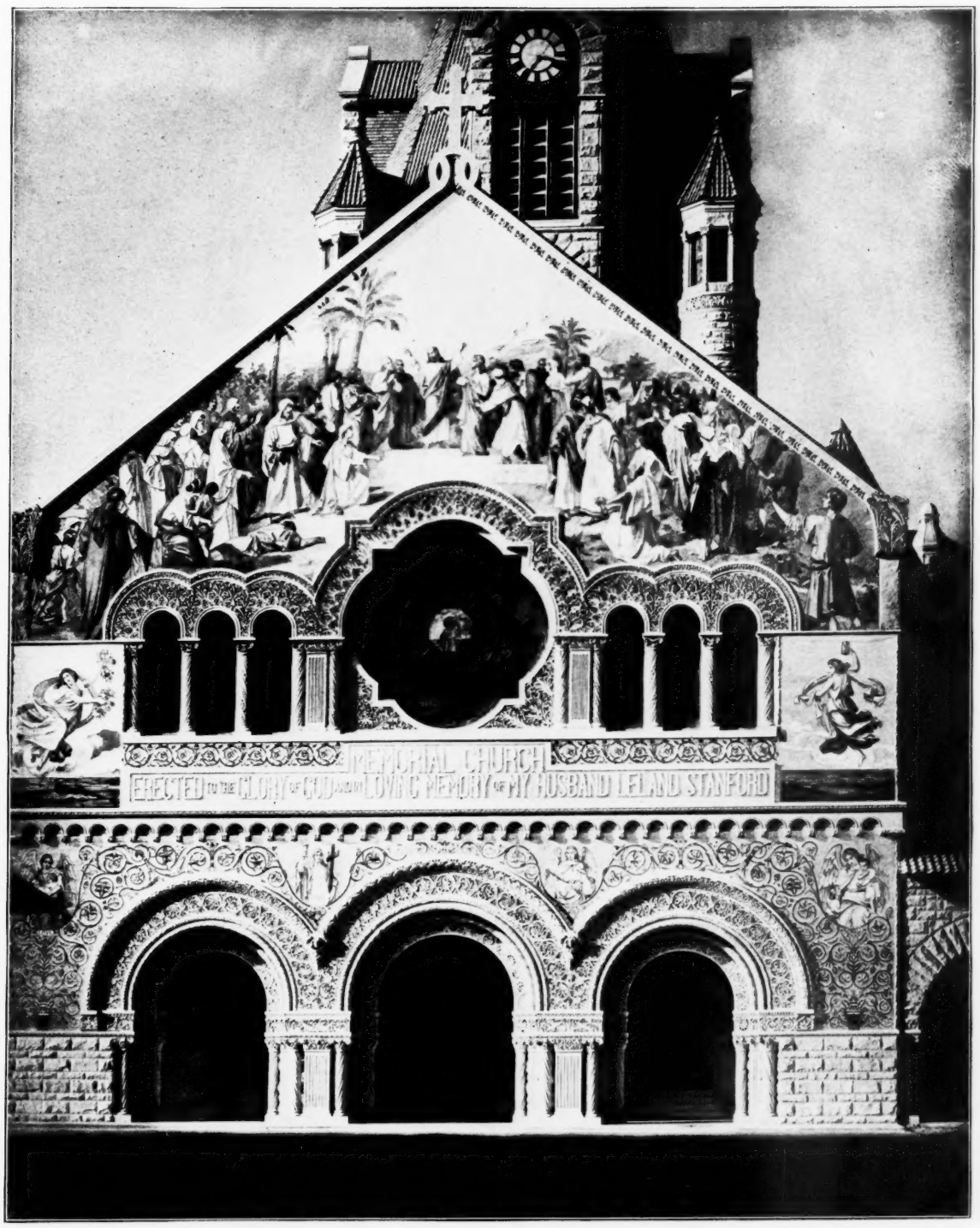

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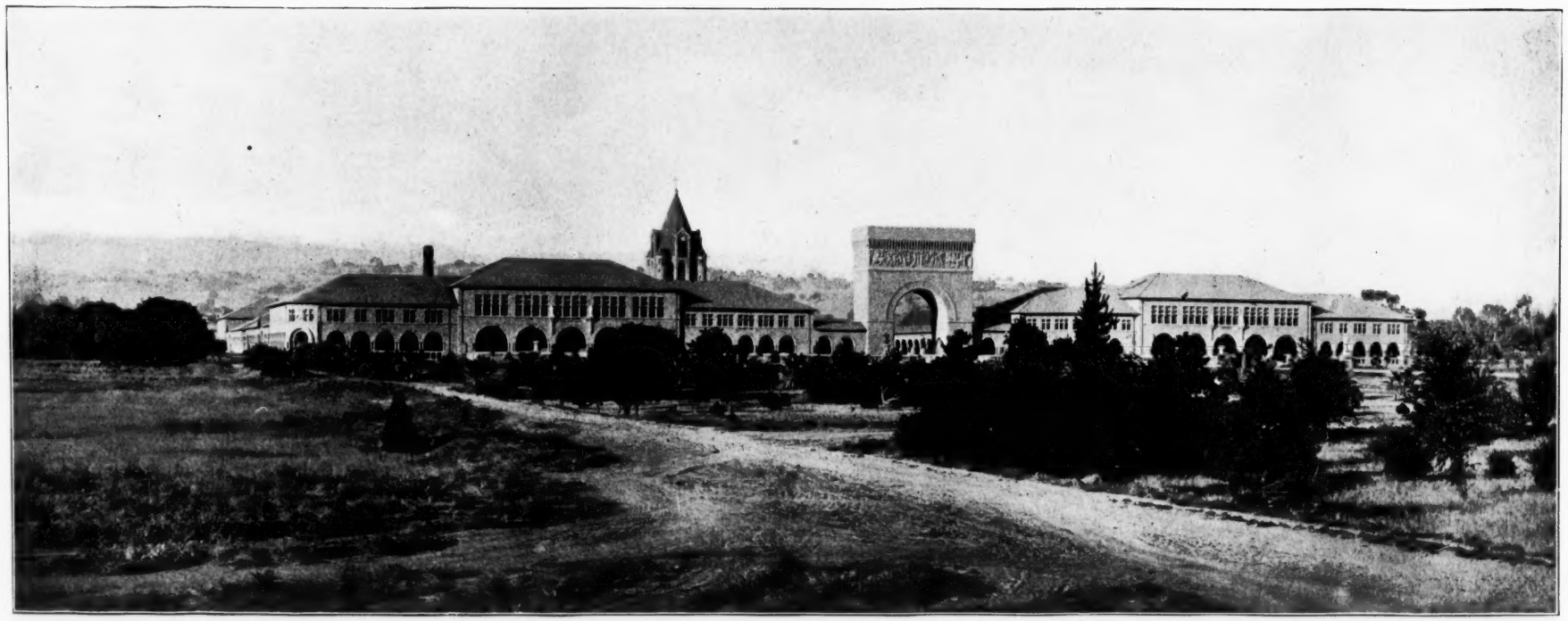

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ARCHITECTURE WITH THE LAITY.

BY F. W. FITZPATRICK.

DID it ever occur to you that a nation's buildings, its architecture and popular taste in matters of construction give the world at large a surer indice of that nation's real progress and civilization than does its literature, its commerce or its other arts? And do you realize that we are lamentably behind many supposedly lesser nations in our popular appreciation of that noble art?

Our architects erect many very handsome structures, they have labored and evolved a mode of construction that is essentially national and have succeeded, in a large measure, in clothing the necessities of our commercial structures most artistically; but it is purely a work of love. There is scant reward and no appreciation of those efforts. The commercial architect, the "hustler" or the one who works cheapest gets the greater part of the work to do; the really capable men, the artists, go hungry or barter their talents to the others who can buy that commodity most cheaply, or dispense with it altogether. There is no necessity for their building beautiful buildings. The people neither demand them nor appreciate them if they do see them. In fact, I often think that the uglier a building is the better does it please popular taste; if it has many gew-gaws, plenty of color, is restless in outline, and is altogether despicably inartistic, people generally will pronounce it "lovely," "too cute for anything" and "stunning."

And why is it so? Simple enough; it is lack of education early in life. We cram our youngsters with an endless lot of stuff; we give our very young clay to model with; we teach the higher grades drawing from life; we ram political economy into the still older ones and fill them at the last stage of their education with the higher mathematics, Greek, Latin and forty ologies that few of them can even name two years after graduation; but not a word or a hint about architecture, unless, of course, the student elects to make that a special study.

I am not clamoring for classes in architecture in our grade schools. Heaven knows there are enough frills and furbelows now in the way of special studies, of which the children get but the merest smattering. But without making any great effort we could get our children to *absorb* a taste for the better, the more refined buildings. In the first place put them in better school buildings. There is a laudable tendency that way now. Our later school buildings, notably about Boston and some of the Western cities are plain, straightforward, wholesome buildings, artistic in their simplicity and eminently fitted for their purpose. But our average school is a monstrosity architecturally. There is usually an insufficient appropriation, and the chosen architect, or more frequently a "carpenter-architect," attempts to beautify his composition with elaborate ornamentation in galvanized iron and other fraudulent pretenses. The child sees that daily and that becomes its standard of the art architectural.

Teachers, in certain localities at least, take their classes out for walks in the country — "nature study." Why could not a walk be taken occasionally through town and the good and bad buildings pointed out to the little ones?

That would mean that the teachers should know something about the subject; true, but are they not compelled to load their minds with a mass of far less important information? Cut off some of the useless things they have to know and let them acquire a little knowledge about that art. The children should be called upon for opinions about buildings in their neighborhood and the teacher could point out the faults or virtues of those buildings and correct the youngsters' taste as she does their English or their behavior.

Why, I have been dumfounded in the little investigation I have given the subject to find how dumbly stupid the great majority of children, of even the graduating high-school classes, are in all that concerns something with which they are brought in such close contact. They can descant learnedly about the force-giving qualities of the food they eat; they know the processes of manufacture through which their clothing passes; they know all about the great men of the day, and all that sort of thing, but when it comes to the buildings that surround them, that they live in, they neither know nor care. What can you expect of them when they grow up? Yet those children will some day be members of building committees; they will build for themselves; they will direct the expenditures for buildings for our societies, our cities, our nation; they will judge (?) architects' plans; and we wonder that popular taste is so debased that the average man is satisfied with such hideous structures as we see all about us and, alas, so many more going up every day!

No, I am not clamoring for Athenian refinement, for high-art classes in our schools, nor for the slavish following of any style or fad in our buildings; all I want is to have the children so taught, even by "unconscious assimilation," if you wish, that they can distinguish 'twixt a tasteful, simple, dignified structure and a garish atrocity that makes us gnash our teeth and call upon high heaven for its destruction.

Yes, it is a simple matter; how long does it take our little maidens to know what is becoming, even what is stylish, in dress and colors? And how old does a boy grow before he knows that tan shoes and a green necktie are not worn with evening dress?

Much of our architecture is on the tan-shoe-and-green-necktie order, yet it passes muster and you even hear it called beautiful. A little effort and we can better it by so providing that our children may have the opportunity of discriminating between the good and the bad, and where once that is done its results are so far-reaching that it will not be long before our nation will be, if not one of artists, at least a people of good taste, refinement and cultured discernment in the grandest, the noblest, the mother of all the arts — architecture.

EGYPTIAN ANTIQUITIES.

HAPPILY, the time has gone forever when the rulers of Egypt looked upon temples and pyramids merely as crumbling masses of stone or as convenient stores of material for building purposes. In the present era of enlightenment the people of Egypt and the world at large, says *The Builder*, have reason to be grateful for the care taken by the government to preserve the remains that serve in a measure to link the twentieth century with remote antiquity. It is to be regretted, however, that those who are responsible for the control of Egyptian finances have hitherto failed to give adequate support to the work, and it is to be hoped that no false notion of economy or international jealousy may be allowed in future to cramp the efforts which are being made to preserve the ancient monuments to the last fragment. In the last report of M. Maspero — director-general of the antiquities service — we notice again and again the complaint that, owing to the lack of sufficient funds, it is impossible to exercise the complete supervision that is desirable for the protection of excavated ruins and the prompt detection of faults, and, when faults are detected, to undertake or to finish the necessary repairs in time to prevent disaster. In connection with protective work, it must be remembered that immediate attention is always essential, otherwise the ceaseless action of the atmosphere and the sand, the continual depredations of unscrupulous and greedy natives, and, we are sorry to say, of equally unscrupulous tourists, must inevitably result in serious injury to monuments that can never be replaced.

The tour of the Director-General in the winter of 1901-1902 showed that damage still continued at many of the sites. In some cases this was due to natural decay, and, in the case of Beni-Hassan, to a violent gale, which flooded the tombs and caused injury to several pictures. At El-Amarna, however, a portion of the painted pavement discovered by Professor Flinders Petrie was wantonly destroyed by repeated blows from the umbrella of an American lady visitor "before either the ghafir or the two European travelers who reported the deed could intervene." It also became evident to M. Maspero that in several tombs of the Theban Kings, and especially in that of Seti I., the vibrations caused by the steps of the parties of tourists who visit the buildings were slowly but surely damaging these monuments, by causing portions of the frescoes on the walls and roofs to fall down. During the winter of 1902 several fragments of roof masonry and a column were displaced in this way. In other cases it appears that damage might have been avoided if adequate measures could have been taken to guard against impending danger at the proper time.

After his inspection, M. Maspero carefully noted the points in each locality where danger was most imminent, and carried out the most pressing works of protection so far as permitted by the funds at his disposal. At the Temple of Seti I., at Abydos, and at that of Rameses III., at Karnak, it was found possible to strengthen some of the architraves and roof slabs by iron girders, in accordance with arrangements made after the inspection of 1901; but unfortunately it happened that at several other places the material and workmen arrived too late for the repairs to be executed. In the small Temple of Thoutmosis III., at Medinet-Habu, two of the slabs in the steps of the sanctuary fell in December, 1902; but the worst damage occurred at Kom Ombo. A huge mass of sand and débris taken from the area, or floor, of the temple was piled up in the courtyard, and the attempt was foolishly made to retain it by a wall of dry bricks built on the remains of the ancient girdle wall. It would have been far more easy, as well as far less troublesome, if the foreman in charge had kept down the height of this mound by spreading the material over a large area; then it would have been perfectly safe, and the labor of building a brick wall could have been avoided. When

the condition of things came to the knowledge of a responsible official, instructions were immediately given to remove the mass of sand pressing against the eastern wall of the courtyard, but, owing to want of money, the work was carried on so slowly that four months later the brick wall broke down suddenly near the place where the figures of the Emperor Macrin and his son, Diadumé-nian, are carved. A stream of sand poured through the breach and displaced some twenty of the blocks of the ancient wall. The sand was cleared out as soon as possible, and the stone wall was shored up with beams, the rubbish being thrown into the Nile so far as the available resources permitted. But the danger was not yet over, and it was proposed to recommence the clearing process in 1903, and, if necessary, to level the entire mound right down, or, at least, those parts of it which pressed against the ruins of the temple on the east and south sides.

At Edfu a still greater danger threatened the magnificent Temple of Horus, which, in spite of the two thousand years that have passed over it, is still in a state of almost perfect preservation. This peril was detected by the Director-General, who noticed that the foundations of the western wall were perceptibly sinking. He ordered the threatened portion to be kept under daily observation, with the result that on returning at the expiration of six months he was convinced that the damage had made perceptible increase and required immediate attention. In December, 1902, the top of the wall was overhanging at the worst place by no less than 0.59 meters, so that it was deemed necessary to demolish entirely a length of as much as seventy meters, from the northwest angle to the gateway leading to the western colonnade of the court. The five most northerly columns of the colonnade were also much damaged, together with the corresponding part of the wall, and required immediate repair. It was estimated that the cost of the necessary works would be 1,200*El.* for restoration of the wall, and 400*El.* for reinstating the columns. Fortunately, owing to the saving effected in the estimated cost of the works at Philæ, it was not necessary for M. Maspero to ask for an additional credit, and the Minister of Public Works immediately authorized him to apply the sum of 1,000*El.* to the works required at Edfu. The necessary material and tackle having been collected, the work was commenced in March, 1903, and the damaged wall has now been rebuilt, but it is probable that the restoration of the columns will not be completed until the year 1905.

For the purposes of the Antiquities Service, Egypt is divided into two districts: (1) The North Inspection and (2) the South Inspection, each of which is under the supervision of a Chief Inspector. There is so marked a difference in the character of these inspectorates that each presents special difficulties and demands special treatment. In the South Inspectorate, from Nag-Hammadi to the Second Cataract, the cultivated lands are restricted in area and the population is extremely sparse. Consequently, the ancient sites have suffered comparatively little; complete or only partially ruined temples and cities abound on both banks of the Nile, and the Chief Inspector is able to devote nearly the whole of his energy to the preservation and protection of the monuments. Hence he has been able, at Edfu, to superintend the erection of girders for the purpose of strengthening the roofing of the Vestibule and of the Hypostyle Hall in the Temple of Horus; at Kom Ombo, to undertake the repairs already mentioned, and at Thebes to see to the erection of wooden doors in several tombs of the Sheikh Abdel Gournah, and to the installation of electric light in six of the royal tombs.

Those who have visited these tombs must have been struck with the marked dilapidation caused by the torches and candles formerly used by tourists, and the same effect attracted the notice of M. Maspero on his return to Egypt two or three years ago. After careful consideration, he came to the conclusion that the best way of preventing further injury would be to illuminate the tombs by electric light. The chief difficulty in the way of this proposal was, as usual, the lack of funds. This obstacle being overcome, a contract was given to an electrical engineer at Luxor, who undertook, for the sum of 560*El.*, to provide and install the necessary plant for lighting the six tombs selected for an experimental installation.

After full consideration it was decided that the generating machinery should be erected in the tomb of Rameses XI., of which the sculptures had already almost entirely disappeared. The entrance and the vestibule were thoroughly cleared and the walls were properly repaired for the installation of the plant, which was completed in March, 1902, and taken over a few days afterward by the chief electrical engineer of the Public Works Department. Everybody who has visited the Royal Tombs since the new system of lighting was installed agrees that it has effected a great improvement, not merely in the lighting of the paintings and sculptures, but also in the condition of the atmosphere, which in former times was almost unbreathable for an hour or two after the visit of every party of tourists, armed with torches, candles and magnesium lamps. Further, to complete the organization of the Valley of the Kings, barriers have been put up to facilitate the inspection of tourists' tickets; the paths have been cleared of rubbish and clearly marked out by large stones, and a covered shed has been erected, where about a hundred donkeys can be sheltered while their riders are going the round of the tombs.

In the Northern Inspectorate, from Nag-Hammadi to the sea, the conditions are totally different from those prevailing in the district to which the foregoing remarks apply. There are but few temples, those of Abydos being the best preserved. Nearly all the sites of ancient cities have been ravaged by the inhabitants of modern towns and villages, who have ruthlessly torn down the ruins to provide material for building their houses. Hence, in the North Inspectorate, the great trouble is to protect the ancient sites and prevent the taking of earth and the sale of materials, and to keep at bay the curio hunters and their agents, who, in many places, have organized marauding bands for the spoliation of cemeteries, showing fight when surprised by the Government watchmen. In this part of the country a small necropolis in the Gebel Abou-Féda, near Koseir-el-Amarna, and the small Temple of Ménephthah, at Echmounein have been cleared out, in addition to the repairs at Abydos previously mentioned. More work would have been done at the latter place but for the simple reason assigned by M. Maspero—"*faute d'argent.*" The state of the laws and the general prejudice existing in favor of the curio poacher are great obstacles to the preservation of the antiquities. It is satisfactory to learn that a new law, intended to regulate various questions connected with antiquities, was drafted in 1902, and since then has been considered by the Government. In order to apply this law to Europeans, however, the consent of the fourteen powers will be required, and Sir William Garstin remarks, "this consent will necessitate a very considerable lapse of time to obtain." In the meantime the best policy for the authorities is to afford more generous financial support to the Antiquities Service, so that the monuments and other treasures scattered over the face of the country may be still more rigorously watched.

A considerable amount of attention was devoted by the service to the exploration and clearing of buildings at Sakkarah, in consequence of the previous examination of various remains in this vicinity. M. Maspero had already formed certain theories in connection with the Royal Tombs of the Memphitic epoch, and the work of clearing, around the Pyramid of Ounas in particular, was undertaken partly for the purpose of throwing light upon the correctness of these theories, and partly to enable tourists visiting Sakkarah to form a more complete idea of the original aspect of the buildings in the immediate vicinity of the pyramid. In 1902 the pyramid itself was completely exposed, and good progress was made with the clearing of the chapel and the vestibules attached to this building. In the course of this work four hypogæa were discovered, containing a number of valuable relics, comprising blue enameled statuettes and funeral amulets of gold, gilded silver and precious stones. But the great discovery of the year was made in the Eastern Galleries. M. Maspero had been struck in the previous year with the extremely ancient appearance of these galleries, and this characteristic suggested to him the possibility that they might belong to some period still more remote than the Pyramid of Ounas itself. The officials collected several helmets of clay, identical with those found by Professor Flinders Petrie and M. Amelineau at Abydos, and bearing the names of two very ancient kings, Ranibou and Hatpousakhmoui. Thus the archaic period comes to light at Sakkarah as well as at Said, and it is now considered advisable to reëxamine all the diggings of M. Mariette in the plain of the pyramids, with the object of bringing to light the Thinite relics which were most probably overlooked by that explorer.

At Karnak the repair of the columns in the Hypostyle Hall and the clearing of the Southeast Court has been continued by Government officials. New foundations for the eleven columns were completed in 1902, and stood the test of the inundation, after which the columns were rebuilt up to the height of six meters, their final completion having been deferred until the autumn of 1903. The excavations in the Southeast Court have resulted in several interesting discoveries, among them some twelve rose granite colossi, one of Ousirtasen IV., a hitherto unknown Pharaoh of Dynasty XIII., some limestone blocks covered with magnificent sculptures from a temple of Dynasty XII., and a building of Amenothes I. Thoutmosis III. evidently set little store on the works of his predecessors, for the statues and carvings were used by him as mere filling when the floor of the court was laid. Should more of these remains come to light, M. Maspero proposes to reconstruct at Karnak the building to which they belonged, but he fears the others may have been used for the foundations of the Pylon, in which case they would probably be lost forever.

At Philæ the works had to be pushed on very rapidly, as, owing first to the length of time required for making good the foundations, and then to the outbreak of cholera, nothing could be done till the middle of October, and by December 3, when the repairs were finished, a part of the island was already under water. M. Barsanti, who was made responsible for the execution of the work, took down and rebuilt the pavilion of Nectanebo, of which the columns were tottering, at the same time replacing in their original positions all the blocks scattered about the site. He completed the small Temple of Arsnoufis, cleaned and repointed the masonry of the portico and of the Great Temple, and rebuilt the propylæa of the chapel of Hathor.

M. Maspero carefully inspected the buildings of Philæ in December, 1902, and in the recently published report he expressed the opinion that every precaution was taken to make the buildings fit to undergo their long immersion in the water, but it appears that some of the sandstone blocks, having been completely dessicated by the dry air through eighteen centuries, absorbed the water with rather alarming rapidity. In one wall, to the east of the western gate, the moisture showed itself to have risen by capillary attraction as high as two meters or more above the level of the reservoir. The effect of the water on the soil was also very marked. In some places the ground was distinctly softened and

yielded readily to the foot, and it is feared by M. Maspero that much of the silt may be carried away, and that the Kiosque of Trajan may suffer greatly in consequence.

Nevertheless, M. Maspero said it was impossible to predict yet what might happen, or to be certain as to the duration of the monuments covering the island, until careful examination had been made after the return of the water to its ordinary level. By this time, we presume, such examination has already taken place, but, of course, the result will not be known until the publication of the next report of the Public Works Department.

In conclusion, we may add that by far the most important work conducted during the year 1902 was the transfer of the National collections from the Gizeh Museum to the new Egyptian Museum building at Kasr-el-Nil, Cairo. Preparations for this work were commenced two years before, and the result was that the whole of the objects of art, many of them of the utmost delicacy, and others of enormous bulk and weight, were transported with astonishing celerity. Most material assistance was afforded by a temporary line of railway connecting the two buildings. For the conveyance of the larger monuments, special tracks and landing stages were constructed on each side of the Nile, and lighters were provided so that the objects could be readily run down to the river, floated across, and carried direct to their destination. The preparation of the summary catalogue progressed *pari passu* with the transference of the collection, and the whole operation was so admirably organized and carried into execution that the public were only excluded from the museum during three months. The removal of the collection was commenced in December, 1901, and completed by the middle of July, 1902, the arrangement and classification of the objects being finished in the early part of September in the latter year.

Some idea of the number and weight of the different articles may be gathered from the statement that over five hundred cases of all sorts and sizes were specially made, and 100 "cafas" were bought to convey pottery. Several of the large stelæ weighed from twelve to sixteen tons each, whilst at least a hundred of the various articles weighed from one to ten tons. The successful completion of so huge a task in so short a time, and without any loss or damage to the collection, entitles M. Maspero to the gratitude of all interested in archæology.

OPENING OF THE LOUISIANA PURCHASE EXPOSITION.

THE opening of the Louisiana Purchase Exposition at St. Louis, which occurred on April 30, marked the completion of another of those great exhibitions that architecturally have done so much not only for the advancement of the art, but to mark that advancement in the United States. As an introduction to a superbly collated summary of the data regarding the hydraulic, civil and sanitary engineering of the exposition, the *Engineering Record* gives so fair a summary of the inception and preliminary work, as well as the architectural administration, that this latter feature is used as a basis for this article.

When the plan of the Louisiana Purchase Exposition was first worked out in its general details, it was proposed to invest in it about fifteen million dollars, the same sum that the United States paid France for the territory whose acquisition it commemorates. Originally it was not an extraordinary project, as such fairs go, for it contemplated the use of considerably less ground than is now occupied. The policy of the managers in making no charge for space and their encouragement of exhibits showing processes rather than products have made necessary great additions to the original plans. The demands for space soon exceeded anything expected by the most enthusiastic friends of the project. An indication of their amount is afforded by the statement of ex-Governor Francis, president of the Exposition Company, that the space desired by exhibitors of breakfast foods alone would fill the entire Agricultural building, over a quarter of a mile long and five hundred feet wide. But the managers, owing to the absence of any charge for space, have been able to pare down the estimates of room which exhibitors presented at first. They have assigned many of the displays to places in the open air, and have thus reserved the roofed areas for the people who most needed them, and these people in turn have been assisted in concentrating their exhibits in the least amount of space consistent with a good appearance. The managers have been troubled to keep down exhibits and not to secure them, to make them representative rather than comprehensive. Even when they exercised all means in their power to restrict the exhibits to objects or processes legitimately within the scope of a world's fair, they soon found that more room was needed within the exposition inclosure than they originally intended. The area has accordingly been increased from the original rather modest tract to 1,240 acres, about twice the extent of the Columbian Exposition, four times that of the last Paris Exposition and that of the Pan-American Exposition, and over five times that of the Centennial. Within its boundary is included a tract large enough to include the Centennial, Columbian and Pan-American Expositions.

These figures are given to indicate the problem which the building of the fair presented. Nothing like it was ever before attempted in magnitude, and the management determined that in beauty it should surpass anything of the sort done previously. Instead of $15,000,000, as first planned, it will represent an expenditure of over $50,000,000. Moreover—and this point is a governing one in considering the actual construction of the exposition—all this money represents a temporary city which must be cleared away next year. Hence all the construction, with the exception of a single building on the crest of land where the fine arts exhibits are grouped, is not enduring and has been so planned as to be amply efficient for its temporary purposes, but nothing more. Hence it is particularly appropriate at the opening of this great exposition to describe what is to many engineers its most interesting feature, the fair itself, apart from exhibits.

The site of the exposition lies about six miles west of the Mississippi river and embraces a part of Forest Park and some adjoining property, including the attractive new home of Washington University. The new buildings of the university are, in fact, used at present as the administration offices of the Exposition Company. The grounds were largely wooded, and the portion of them covered by the main group of exposition buildings was a dense tangle of brush and trees, through which the River des Peres wound in a very circuitous channel. Some time ago, during the prevalence of hard times in the city, a local newspaper collected subscriptions for the construction of a pond at this part of the grounds, and this was dug by men who would otherwise have been without work. Its presence added to the difficulties of construction. The most important feature of the site is its undulating character, which has been utilized in making the exposition picture far more impressive than anything possible on the flat plains where previous fairs were held.

The laying-out, design and construction of the exposition have been in charge of Mr. Isaac S. Taylor, director of works. His architectural work in St. Louis is too well known to need mention here, but it is certainly proper to put on record the forceful manner in which the building of the fair has been pushed along by his energy. An architect is expected to be an artist and a builder, but he is not commonly ranked as an administrator as well. Yet the Louisiana Purchase Exposition to-day is a monument to the executive ability with which Mr. Taylor has carried out a work foreign to his previous experience on a scale that many people with a knowledge of world's fair complications have all along predicted to be impracticable. In the execution of his plans he has been assisted by several men peculiarly fitted for the work. Mr. Emmanuel L. Masqueray, Chief of Design, after winning distinction at the Ecole des Beaux-Arts, attracted much attention in France by his projects for the restoration of famous buildings, which led to his appointment as a member of the National Commission on Historic Monuments. He developed the landscape architecture and many of the buildings of the fair, and has been Mr. Taylor's assistant in the artistic features of the undertaking. The civil engineering work of the exposition Mr. Taylor delegated to Mr. Richard H. Phillips. At the outset of the work there was no department of this character, and Mr. Phillips was rated simply as a topographical surveyor, but little by little, as the streets, water and sewerage systems, lagoons and other works had to be taken up, it was found that an exposition of this size without a civil engineering department was impossible. Mr. Phillips' title is Chief Civil Engineer, and a large part of this article relates to the work he has done. That it has been accomplished at all is doubtless due to his absolute refusal to worry over the many annoyances and delays incident to the execution of such a complicated undertaking. Few people who have not been behind the scenes during the building of a fair can form the faintest conception of the difficulty of keeping order among the contractors, day laborers, concession holders and others. An army without military discipline is a rabble, yet here in the outskirts of St. Louis was a veritable army of workmen, not only without discipline, but often commanded by men whose interests clashed. The management of such a force by men without previous experience in exposition building speaks volumes for the skill with which the staff was selected. In such positions executive ability is as important as technical attainments and more difficult to obtain.

The location of the main group of buildings was settled by topographical conditions at the northeast corner of the grounds. The great palaces have been spread out like a fan, with its hinge on the top of the knoll which is crowned by the Festival Hall and the Fine Arts Palace. The three main streets of the exposition are directed toward the cascades and the beautiful structure at its crest, and the main picture of the fair is deeply impressed in this way on the most hurried visitor. It is interesting to notice that the center lines of the three main streets converge at a point 300 feet back or south of the point of convergence of the axes of the buildings.

At the outset of the enterprise the general features of the main buildings and the grounds were determined by a commission of architects, of which Director Taylor was chairman. The various architects then developed the exterior details of the buildings, while their structural design was worked out by the Division of Works. It was decided to have the eaves line of the principal structures uniformly 60 feet above the ground and to have the prevailing exterior tint an ivory white, in order to avoid the glare which characterized the Chicago fair buildings and the dusty appearance of those at Buffalo. Although it was originally intended that the general style of architecture should be a free treatment of the Renaissance, some of the buildings, while filling admirably their places in the main picture, would hardly be called Renaissance by most critics.

Structurally the buildings resemble those at Buffalo, which had wooden frames, rather than those of Chicago. The system

of construction which was followed at the Pan-American Exposition has been adopted at St. Louis. Timber is used everywhere for columns and trusses, except in the Government and Fine Arts buildings.

The central feature of the exposition, the Festival Hall, has, however, a great dome which is unusually interesting from a structural point of view. This beautiful building, of which Mr. Cass Gilbert was the architect, is intended for musical performances on the largest scale, and its interior was specially planned under the direction of Mr. Masqueray. The auditorium has a floor inclined downward toward the stage, which has a wide proscenium arch and an organ chamber at its back 72 feet long by 29 feet wide. The ceiling is far below the exterior dome, and so it has been possible to use a novel system of construction in the building.

The dome framing is carried by four pairs of columns, one pair near each corner of a square measuring approximately 96 feet on a side. Each column consists of four 8 by 8 inch timbers, with 2 by 10 inch lacing. Special precautions were taken to give them a thoroughly firm support. They rise to an elevation of about 76½ feet above the floor of the lowest boxes and there carry four trusses, marked A in the illustrations. Placed diagonally across these trusses are four more marked B, and this system of trusses is built up cobhouse fashion for five tiers. These trusses carry a large number of 6 by 8 inch posts, braced together in all directions by 2 by 10 inch planks, which support the exterior dome. The top of the structure is approximately 125 feet above the top of the columns, or 200 feet above the main floor level. The domed ceiling of the auditorium springs from the same elevation as the lowest tier of trusses and is 95 feet in diameter. Its construction is so well shown in the drawings that it need not be described. The exterior portion of the building up to the springing line of the dome, and the interior features are carried by groups of 8 by 8 inch posts latticed with 2 by 10 inch plank.

The construction of the balcony of the auditorium is indicated in a general way by the diagram of a portion of it over the entrance to the main floor opposite the stage. The usual construction differs somewhat from that shown. About 19 feet inside the main wall of the hall is a circle of columns about 11 feet apart on centers. Each column is 2 feet square and consists of four 8 by 8 inch posts latticed in the usual manner. Between the wall and this curved line of columns is a promenade carried by 2 by 10 inch floor beams about 18 inches apart. They rest at the wall on a 10 by 14 inch horizontal beam and at the other end on an 8 by 14 inch beam securely bolted inside the columns. The balcony is of cantilever construction. The inclined piece carrying the floor is a 3 by 14 inch timber. At the outer end it is braced back to an 8 by 8 inch horizontal timber connecting the columns by a 2 by 8 inch timber, and a similar timber runs down from the center of the 3 by 14 inch top plank to the same 8 by 8 inch girder between the columns. The balcony projects about 25 feet from the face of the columns and the vertical distance between the 3 by 14 inch and 8 by 8 inch girders at the line of the columns is about 10 feet. These cantilever frames are spaced about 2 feet on centers and near their projecting end are framed into a 20 inch I beam.

All structures excepting this building, the Government and Fine Arts buildings are designed with the same general system of timber construction which was found so successful at the Buffalo fair. The work was done under the immediate direction of Mr. W. H. H. Weatherwax, Chief Draftsman, and Mr. Philip Markmann, Chief Engineer, of the Department of Architecture.

In figuring stresses of the timber framing, 20 pounds wind pressure was assumed, 30 pounds dead load on the roof rafters and 40 pounds on the trusses. For yellow pine a working stress of 1,800 pounds in tension and bending was assumed.

The general method of construction of the exteriors of these buildings has been the subject of so many articles that it is unnecessary to describe it again. It is interesting to notice, however, that the size of the individual staff castings is gradually being reduced, and large columns and such work are now made in sections and the joints finished after the pieces have been nailed in place. The staff for each of the 60-foot columns of the Varied Industries building, for example, was in twelve sections.

Many of the buildings are carried on pile foundations, as the ground in the northwest part of the exposition tract, where the River des Peres lies, is more or less soft. The longest piles are 30 feet, but a considerable proportion are much shorter, as a shale rock lies not far below the surface. Steam piledrivers were used on the foundations of some of the buildings, but ordinary drop-hammers were generally employed. Where the ground was good, the foundations were made of timber cribbing.

The largest buildings, with size, cost and name of the designers, are as follows:

Name.	Size.	Cost.	Architect.
Transportation	525 by 1,300	$696,000	E. L. Masqueray.
Manufactures	525 by 1,200	712,399	Carrere & Hastings.
Varied Industries	525 by 1,200	604,000	Van Brunt & Howe.
Machinery	525 by 1,000	496,000	Widmann, Walsh & Boisselier.
Mines and Metallurgy	525 by 750	490,000	Theodore Link.
Liberal Arts	525 by 750	475,000	Barnett, Haynes & Barnett.
Electricity	525 by 750	399,940	Walker & Kimball.
Education	525 by 750	319,399	Eames & Young.
Agriculture	500 by 1,600	529,940	E. L. Masqueray.
Horticulture	400 by 800	228,000	E. L. Masqueray.
Forestry, Fish and Game	300 by 600	171,000	E. L. Masqueray.

As before stated, the electrical and mechanical department of Mr. Taylor's work has been under the charge of Messrs. Henry Rustin and Edward B. Ellicott. The actual operation of the service plant is in the hands of Mr. Charles E. Foster. Mr. Thomas M. Moore is Chief of the Department of Machinery, and Prof. W. E. Goldsborough, Chief of the Department of Electricity.

THE CHICAGO ARCHITECTURAL CLUB EXHIBITION.

THE seventeenth annual exhibition of the Chicago Architectural Club, which was opened at the Art Institute March 31, and closed April 20, included in its catalogue 469 drawings, water-colors, photographs, vases and panels in terra cotta, etc.

The larger part of space was given to public works. Great interest centered in the designs of Burnham, Carrère and Brunner for the public buildings and port arrangement for the city of Cleveland. Cram, Goodhue & Ferguson, of New York, showed the drawings of accepted competitive designs for the reconstruction of the United States Military Academy, at West Point. In comparison are the drawings of D. H. Burnham & Co., made also for the West Point competition, and those of Frost & Granger for a riding hall at West Point.

Of equal interest were Palmer's and Hornbostel's designs for the public improvement of New York city, in which bridges play an important part. There are several models, with many sketches of Manhattan bridge, Blackwell's Island bridge, Pelham, Bay Park bridge, Williamsburg bridge, with detail drawings of the new city hall station and perspective views of the city hall and elevated stations, with a general view showing locality of the terminal station of Brooklyn bridge and a bird's-eye perspective of the river and city. Through a change in the general design, it is understood that these bridges have been placed in the hands of Carrère & Hastings.

The colleges of architecture of the universities made considerable display. Cornell University exhibited plans for a Government building for the entertainment of State guests, signed by R. A. Tissengen; monument to patriots of the American Revolution, by Herman Dercum; an exedra in a cemetery, by Charles S. Cobb, and a museum of fine arts for a small city, by Fred L. Ackerman.

The University of Pennsylvania confined its exhibit to drawings of a chapel and a church, by L. B. Holland, C. E. Howell, C. F. Rabenold and E. M. Smith, and a clubhouse for an art society, by H. C. Hibbs.

The Washington University gives drawings for an establishment for automobile amateurs and a rock-cut tomb.

The University of Illinois presented attractive sketches in color and drawings for a memorial hall suitable for the National Society of the D. A. R. The men represented were Joseph W. Wilson, with Italian studies; Neil McMillan, with memorial hall, and F. Schott, sketches in pencil and color.

A large proportion of the exhibition represented local architects, for as in New York the committee there, Messrs. Long and Phillips, who recently removed to that city from Chicago, secured through their personal efforts most of the Eastern exhibits, so the members of the club worked for its success in Chicago, and the result was one of the best showings of good work presented in years. The club competitions attracted much attention.

Thomas E. Tallmadge's winning design for the Victor Falkenau prize in the competition for the fourth annual traveling scholarship of the Chicago Architectural Club, and the drawings of Roy Eliel, which were awarded second place in the same competition, the work of two earlier prizewinners who were sent abroad, Burch Burdette Long and John H. Phillips, were exhibited, both men showing considerable industry and talent in a host of sketches of paintable scenes in England, Italy and other haunts of the wayfarer.

W. B. Mundie exhibited recent work in public-school architecture, and William B. Ittner showed how St. Louis is advancing along those lines. Three prize designs and the honorable mention in the Brickbuilder competition for a small public library under the auspices of Rogers & Manson, Boston, were shown. Libraries and postoffices and theaters are well represented in various schemes. Hints of what is to be done by the way of improvement at Chautauqua, by Albert Kelsey, are shown in plans of the civic center, of the grounds and arts and crafts village.

Among the exhibits by Chicago architects were a large variety of designs for structures all over the United States. S. S. Beman had designs for First Church, Scientist, Pittsburg, Pennsylvania, and T. B. Blackstone Memorial Library; C. E. Brusch for State Fair building, Northern Illinois State Normal School, Woman's Building at University of Illinois, and other drawings; S. N. Crowen, Lake County Hospital and apartment buildings; H. W. J. Edbrooke, competitive design for Woman's Building, University of Illinois; George Lyon Harvey, hospital, Evanston, and private residences; Hill & Waltersdorf, residences; Jarvis Hunt, the practical construction of warehouses, and in a lighter way a gate lodge for a Lake Geneva residence; Jenney & Mundie, a plaster model for Illinois State Monument at National Park, Vicksburg, and proposed office building; George H. Maher, the new Edgewater Presbyterian Church and residences; B. H. Marshall, Nixon Theater, Pittsburg, hotel and residences; Patton & Miller, handsome drawings of the First Congregational Church, Wilmette, First Presbyterian Church, Rockford, and public libraries

at Council Bluffs and Menominee; Peabody & Beauley, residences; Dwight H. Perkins, competitive design for postoffice building, Hammond, Indiana; Charles H. Phillips, designs for the Hammond postoffice building; Pond & Pond, a varied showing of Y. M. C. A. building at Lake Geneva, United States postoffice at Kankakee, a mercantile building and private residences; Louis B. Rasmussen, competitive design for soldiers' and sailors' monument; James G. Rogers, a plan for United States postoffice and courthouse, Hammond, and residence; Richard E. Schmidt, central pavilion of St. Anne's Sanitarium; Howard Shaw, Second Church, Chicago, and residences; John Sutcliffe, an array of seven churches (Grace Church, Oak Park; St. James' Church, Sturgis, Michigan; Christ Church, Pensacola, Florida; Church of Our Savior, Little Falls, Minnesota; St. Andrew's Church, Ashland, Wisconsin; St. Thomas' Church, Plymouth, Indiana; St. James' Church, Dundee, Illinois); Victor Traxler, a study for a parliament house to be erected on eastern portion of the Garden of the Tuileries, Paris, France; Watson & Hazleton, the plans for reproduction of the City of Jerusalem, World's Fair, St. Louis; water-color perspective of hospital for contagious diseases, Chicago; hospital for tuberculosis patients, Dunning, and three cottages for insane patients, Dunning.

P. J. Weber is represented by a refectory, stadium and theater for Ravinia, public libraries for Seattle and Colorado Springs, a cathedral and a mausoleum for Archbishop Feehan. H. R. Wilson showed sketches of interiors of residences; H. B. Wheelock, United States postoffice, Kankakee, competition; Benjamin E. Winslow, drawings from Athens, Rome and Denmark; W. Carbys Zimmerman, United States postoffice at Kankakee; Atchison & Edbrooke, sketches for school and residence; J. L. Hamilton, a design for monument; William Jean Beauley, residences for New York, a soldiers' and sailors' monument; E. Theodore Behr, work on residences.

Plans and technical exposition of buildings were interspersed with colored sketches, among which those of Pierce Anderson and John Moliter attracted considerable attention. The "Teco" vases, designed by W. B. Mundie, were favorably criticized. A large granite vase, with sprays of sculptured roses, from the works of Charles G. Blake, was given a conspicuous place. Terra cotta panels and pedestals from the Northwestern Terra Cotta Company had an artistic value.

PLASTER DECORATION.

TOUCHING the origin of the plastic art, Mr. I. D. Crace, in an interesting paper read before the Architectural Association and printed in *The Builder* of March 19, said it was reasonable to suppose that such fictile substances as clay were wrought into form even before men learned to bake earthen vessels. The mud-built houses of man, even in a barbaric state, could not have been void of all attempt at ornamentation when the material itself offered such facilities. The surface of mud-brick walls must soon have been "rendered" with a coating of the same material, which, while moist, would readily receive any impress — the imprints of the workman's hand, marks left by his rough tools; a chance symmetry would lead him to intentional device, impressed by his fingers or traced with a stick.

The use of stone led to the demand for some material which would adhere to stone and give a uniform surface, and this was found in simple compositions having burnt lime as the binding ingredient. Plaster, in the form of a very fine, smooth coating of lime-putty, was used to give a finished surface to the stone structures of Egypt in very early times, but does not seem to have been much used plastically for ornamentation. It was similarly used by the Greeks, and the author gave reasons for his inference that stucco was used decoratively in an early period of Greek history. Among the many wonderful revelations of Mr. Arthur Evans' explorations in Crete are the stucco decorations in relief of the walls of the Palace of Knossos, which was destroyed before 1500 B. C.

Beautiful specimens of decorative stuccowork have been unearthed in excavating the ancient sites of Rome and the surrounding country. The author referred to those at the Baths of Titus, discovered in the sixteenth century, to those at Herculaneum and Pompeii, and to the decorations of two sepulchral chambers discovered on the Via Latina, dating about A. D. 160. In the Farnesina grounds remains of buildings have been unearthed with stucco reliefs unsurpassable for elegance and refinement of execution. One great value of these works is the lesson they teach in the adjustment of the actual treatment in execution to the nature of the material. The whole surface speaks aloud of the ready and dexterous use of fingers and tools on a light plastic material. One almost imagines the stucco yet moist, still impressible to the touch. It is as if some fairy goddess had found it soft and lightly fingered it. There is a sense of evanescence about it, while the charm of perfect attainment remains.

The author then turned to a very beautiful but very different growth of plaster decoration developed under the Mohammedan conquerors, describing the decorations of the great Mosque of Ibn Tooloon at Cairo (ninth century). In the Arabic art of Egypt plaster continued to be used as an important factor in decoration during the next five centuries. The ornamentation of the domes and the use of a fine stucco in low-relief ornament, as a preparation for gilding and color on the wooden beams of its flat roofs, are specially noteworthy. The palace of the Alhambra is the very apotheosis of plaster — of plaster casting carried perhaps to an excess of richness and elaboration, but never losing its true quality of ornament designed purposely for casting. The beautiful effects of a mere repeat casting the author thought were attained because (1) the designers thoroughly understood grace of line and how to fill their spaces; (2) they never lost sight of the fact that the work was to be cast; (3) most important of all, the repetition did not include the representation of natural objects, for it is where representations of nature are concerned that repetition is offensive.

In European art during medieval times we get little glimpse of the decorative use of stucco until the fifteenth century. An original and striking example is to be seen in the drum of the dome of San Eustorgio at Milan, the work of Michelozzo Michelozzi, of Florence, said to have been executed in 1462. In the second half of the fifteenth century Bernardino Pinturicchio was making considerable use of low-relief enrichments, not only for the moldings with which he divided the surfaces he had to decorate, but as ornamental features within the paintings themselves. A few years after Bramante was at work on St. Peter's. His investigations, says Vasari, resulted in the discovery of the method of preparing stucco employed by the ancients, the secret of which had been lost in their ruin and remained concealed ever since. Vasari relates how Raffaelle and Giovanni da Udine went together to see some subterranean chambers then just discovered in excavating the Baths of Titus. Giovanni was so much impressed by the stucco decorations with which they were covered that he devoted himself to their study, and reproduced them with so much grace and facility that there was only now wanting to him the knowledge how to compound the stucco. At length, by compounding finely powdered white marble with the lime from white travertine, he succeeded in producing the stucco of the ancients. Raffaelle at once caused Giovanni to decorate all the vaultings of the Papal Loggie in stucco. Pierino del Vaga, another of that wonderful band of young artists in the Vatican, stands preëminent as an ornamentist and as a decorative colorist; his stuccowork has a quality of fine decorative appropriateness, both in design and scale, that has been surpassed by none. Of his bolder conceptions the great ceiling of the Sala Regia is a fine example. Alessandro Vittoria was one of the best-known stuccoworkers in the latter half of the sixteenth century. His work under Sansovino at Venice, in the Libreria, and in the Scala d'Oro of the Ducal Palace are characteristic examples of his style.

Francis I. attracted to France some of the most capable of the Italian artists skilled in stucco. Primaticcio and Il Rosso came about 1530, and their wonderful stucco decorations at Fontainebleau long influenced French design and French sculpture. Niccolo dell Abbate followed twenty years later, and then his three sons, the youngest becoming after a time the director or manager of these decorative works. Their work is a fine field for the study of what may be done in stucco, and it was the parent of the rich decorations of Louis XIV.'s reign, which, in their turn, became the model for civilized Europe.

Henry VIII. was also very successful in securing the services of able artists in England, many of them pupils or relations of those who were at work on the masterpieces of the Vatican. Pietro Torrigiano, who was among the earliest, completed the bronze monument of Henry VII. in 1519.

It was to the Palace of Nonsuch that the new stream of talent was directed; although not a vestige of it now remains, the names of some of the men who adorned it are a guarantee that the work was neither coarse nor commonplace. As to the question lately raised about the external panels of Nonsuch being in stucco, the author said there was not the smallest doubt on the subject. There were plenty of examples done more roughly within the next seventy or eighty years which remain to this day, in spite of exposure and neglect.

External decorative work in plaster continued to be a feature of many English houses down to the end of the seventeenth century. But the interior was the more important field, and from the time of Nonsuch for a century no house of any pretense was without its elaborate plaster ceiling and frieze. Admirable in many ways as these old English ceilings are, few of the men who did them had either the art or the skill of the Italians who made ornamental plasterwork popular. The latter endeavored to make their work perfect in modeling and finish. Each figure was a work of art. In the English plasterwork, however, scarcely a figure can be found that is not more or less barbaric in execution, and the minor work, effective as it is, is often greatly wanting in grace of line and in intelligent modeling.

The next step in English plasterwork leads straight to the classic work of Jones and Wren. The gap caused by the Civil War made the change more complete. Building operations after the great fire opened the way to new men and methods. French and Italian plasterworkers were again invited to England in Charles II.'s reign. Besides the work in St. Paul's, St. Stephen's, Walbrook, and other city churches, the chapel of Trinity College, Oxford, may be cited as a good typical specimen of plaster ornamentation. A feature of some of the plaster decoration of the end of the seventeenth century is the elaborate modeling of fruit, flowers and foliage in full relief, often in parts quite detached from the grounds, and either supported by wires imbedded in the plaster or by small sticks of tough wood. This work, full as it is of artistic ingenuity and clever modeling, was by that very ingenuity departing from any true principles of stuccowork, and therefore hastening the decay of the art. A

notable example is the ceiling of the Chapel of the Royal Hospital, Kilmainham.

The next modification of style was largely due to Kent. In his designs the plaster ornamentation is mainly used as architectural enrichment, bold in treatment — sometimes too bold for the space, but effective in its way. Following closely on Kent's work came a flood of plaster ornament derived from the French work of the time (Louis XV.). This was sometimes very good — often straggling and purposeless, yet not without a certain elegance. The best of it was at least partly modeled, but the greater part was cast and fixed. With this style stucco modeling practically came to an end. All that followed was cast and fixed.

The change of style brought about by the brothers Adam was due to the same influence which had produced the detail of the Vatican Loggie and the Villa Madama — namely, that of the antique stucchi in the excavated ruins in Rome. The difference in the result may be thus accounted for. Giovanni da Udine studied them, as an artist, by endeavoring to produce similar work with his own hands. Robert Adam, as a draftsman, copied them on paper, as did probably the Frenchmen through whom France adopted the style. It was undoubtedly elegant and the effect refined; and, since the method of reproduction was mechanical, it lent itself to extensive use.

Much good plasterwork has been done in the last half of the nineteenth century — always in the form of attempts, sometimes very successful, to reproduce a past style, and by casting. "Fibrous plaster," introduced since 1861, is a valuable innovation, and presents immense advantages. It does away with the danger of enormous overhead weight, and requires so much the less timber structure to carry it; it can be executed quickly, and it dries quickly.

The facility of plasterwork is at once its recommendation and its danger. It is, perhaps, well to be sometimes reminded that the simplest materials have not been scorned by the greatest men, and that the finished result of any art pleases not only by the talent bestowed on it, but by the fitness of the limitations which the artist has imposed on himself.

RESIGNATION OF CASS GILBERT FROM WORLD'S FAIR BOARD.

THE report from St. Louis that Cass Gilbert, of New York, a member of the Architectural Commission of the Louisiana Purchase Exposition, has resigned his position and brought suit in the United States Circuit Court against the Exposition Company for $47,113.96 salary alleged to be due him, will be read with interest by many who have followed the history of the designing of these buildings.

The plaintiff alleges in his petition that from June 25, 1901, to April 27, 1904, he performed labor for the defendant corporation for which he was to receive $78,500.00, and that he has been paid only $31,380.96. He also asks for interest at the rate of six per cent per annum and for the costs of the case, which is scheduled for trial in the September term.

In his letter of resignation to President David R. Francis, Mr. Gilbert complains that the Board of Architects has not been consulted as to the general plan and scope of the buildings, and that the Director of Works has sedulously concealed the names of those who designed the buildings in all the publications concerning the work. He says:

"Without making criticisms or complaints of individuals, and fully appreciating the courtesy and consideration which I have at all times received from you personally, I can not but feel that the Commission of Architects have not been allowed that scope of freedom which their letter of appointment entitles them to, and that the general plan has not attained the satisfactory results which an adherence to the original plan of their employment would have accomplished.

"The letter of appointment expressly provided that the commission of architects should form a general plan for the grouping of buildings, and that all of the buildings should be submitted to such commission for criticism and approval, and that such commission was also to act as an advisory board on matters of design, sculpture and color treatment, not only of the individual buildings, but of all others during the entire period of the execution of such general plan.

"No such collaboration has been had, and no color scheme such as was contemplated has been carried out, or even attempted. On the contrary, the sites of the buildings have been arbitrarily changed many times, and, so far as the buildings placed in my hands are concerned, many changes in the sculpture and decorations have been made without any consultation whatever with us.

"I think I voice the feeling of most, if not all, of the Commission of Architects in saying that one of the chief inducements we had in accepting such meager compensation for the important work contemplated in our original employment was that our reputations would be enhanced by the publicity of having our respective names known as the designers of the buildings respectively allotted to us; but instead of that there has been, on the part of the Director of Works, a sedulous concealment of the names of those who designed the buildings in all publications which have been made concerning them, so that the world at large can not give such credit as may be due to any one of the architects for the individual work which he has performed."

For reasons similar to those given by Cass Gilbert, Frederick W. Ruckstuhl resigned from the office of Chief of Sculpture of the St. Louis Exposition on December 27, 1902. In an interview published in the New York *Times* on the following day, he said that Isaac S. Taylor, Director of Public Works, had not been in sympathy with him in his desire to beautify and ornament the public buildings of the exposition. He referred to a letter which he wrote to David R. Francis, President of the St. Louis Exposition, in which he said that he had been repeatedly humiliated by Mr. Taylor.

Mr. Taylor, on the other hand, affirmed that Mr. Ruckstuhl was dissatisfied because he (Mr. Taylor) had objected to the amount of work the sculptor had allotted to himself.

UNIFORM BUILDING LAWS.

THE International Society of State and Municipal Building Commissioners was recently organized at Washington, largely through the efforts of F. W. Fitzpatrick, of that city, who was chosen its secretary. Under the direction of this competent architect and authority upon building requirements generally, this movement is the most important that has been undertaken since the organization of the National Association of Builders. It is of inestimable value to the public in the reorganization of building laws, both State and municipal, and will do much to secure better fire and constructive methods, as one of the first acts of the new organization was to inaugurate a movement to secure uniform building laws. No argument is needed to establish the proposition that the absence of all semblance of uniformity in the building regulation of the different cities and States is a decidedly unfortunate condition.

In a large country like ours, variations of climate and the character of the building material most available for use may prevent the establishment of absolutely uniform laws; and the greatly disproportionate size of cities may always necessitate some variations. In this question fire protection cuts quite a figure and the system in use, together with its efficiency, must of necessity exert an influence upon the controlling building laws.

In these days, when construction companies and private firms are taking contracts in all parts of the country, uniform laws would prove a decided advantage. An intimate acquaintance with the practical art of building is absolutely essential for one who is to make figures as to the cost of construction, and an acquaintance with the building laws of the city where the work is to be done is likewise of vast importance. It is true that copies of building laws of any city or State can be secured, but they can not be mastered or even fairly appreciated at a glance, and time, when a bid is to be placed, is usually of the utmost importance. From the standpoint of the contractor, uniform building laws would prove of decided value, and the same will apply to those desirous of letting contracts. In other words, uniform laws would tend to decidedly broaden the field of operations, not only to the mutual advantage of both of the contracting parties, but to that of the world of construction as well, since a broader interchange of ideas and methods would thereby be secured.

Such a system would likewise prove of distinct value from an insurance standpoint, permitting a better classification and more uniform rates of premium. From a legal standpoint it would also possess advantages, giving a better standard for the measure of damages and more accurate means for determining the rulings of courts. By broadening the field of operation it would greatly facilitate the general introduction of really valuable inventions and improvements pertaining to the building trades.

Adopted at this time, when there is a strong movement in the direction of fireproof construction, uniform building laws would give it a decided impetus, thus furnishing better protection to property and human life. The new society has started a crusade that is likely to meet with favor and deserves to be crowned with success.

THE UNIFORM CONTRACT.

AS there are still architects in the United States who persist in using those old forms of contract which were formulated by their legal advisers and are supposed to cover all contingencies in the agreements between architect and contractor, it seems proper to present to them the latest revised form of the Uniform Contract. This was first formulated by a joint committee of the American Institute of Architects and the National Association of Builders, and revised from time to time as errors were discovered or changes to make the form more equitable seemed necessary. The committees of both organizations have always been composed of men of the highest standing and widest experience in their professions and supported by the best legal advice obtainable, so that to-day the present contract is probably the most equitable contract that can be devised for the proper transaction of business between contractor and owner. While in this contract form provision is made for such necessary interpolations as may be necessary, the contract is perfect as a whole, and contractors and architects once familiar with its provisions may sign it without that close scrutiny that is necessary in all private contract forms. As its name indicates, it is "uniform" and perfectly equitable, and should be used to the exclusion of every other form.

THIS AGREEMENT, Made the ——— in the year one thousand nine hundred and ——— by and between ——— party of the first part (hereinafter designated the Contractor), and ——— party of the second part (hereinafter designated the Owner),

WITNESSETH, That the Contractor , in consideration of the agreements herein made by the Owner , agree with the said Owner as follows:

ARTICLE I. The Contractor shall and will provide all the materials and perform all the work for the ——— as shown on the drawings and described in the specifications prepared by ——— Architect , which drawings and specifications are identified by the signatures of the parties hereto, and become hereby a part of this contract.

ART. II. It is understood and agreed by and between the parties hereto that the work included in this contract is to be done under the direction of the said Architect , and that ——— decision as to the true construction and meaning of the drawings and specifications shall be final. It is also understood and agreed by and between the parties hereto that such additional drawings and explanations as may be necessary to detail and illustrate the work to be done are to be furnished by said Architect , and they agree to conform to and abide by the same so far as they may be consistent with the purpose and intent of the original drawings and specifications referred to in Art. I.

It is further understood and agreed by the parties hereto that any and all drawings and specifications prepared for the purposes of this contract by the said Architect are and remain ——— property, and that all charges for the use of the same, and for the services of said Architect are to be paid by the said Owner .

ART. III. No alterations shall be made in the work except upon written order of the Architect ; the amount to be paid by the Owner or allowed by the Contractor by virtue of such alterations to be stated in said order. Should the Owner and Contractor not agree as to amount to be paid or allowed, the work shall go on under the order required above, and in case of failure to agree, the determination of said amount shall be referred to arbitration, as provided for in Art. XII of this contract.

ART. IV. The Contractor shall provide sufficient, safe and proper facilities at all times for the inspection of the work by the Architect or ——— authorized representatives; shall, within twenty-four hours after receiving written notice from the Architect to that effect, proceed to remove from the grounds or buildings all materials condemned by ——— whether worked or unworked, and to take down all portions of the work which the Architect shall by like written notice condemn as unsound or improper, or as in any way failing to conform to the drawings and specifications, and shall make good all work damaged or destroyed thereby.

ART. V. Should the Contractor at any time refuse or neglect to supply a sufficiency of properly skilled workmen, or of materials of the proper quality, or fail in any respect to prosecute the work with promptness and diligence, or fail in the performance of any of the agreements herein contained, such refusal, neglect or failure being certified by the Architect , the Owner shall be at liberty, after ——— days' written notice to the Contractor , to provide any such labor or materials, and to deduct the cost thereof from any money then due or thereafter to become due to the Contractor under this contract; and if the Architect shall certify that such refusal, neglect or failure is sufficient ground for such action, the Owner shall also be at liberty to terminate the employment of the Contractor for the said work and to enter upon the premises and take possession, for the purpose of completing the work included under this contract, of all materials, tools and appliances thereon, and to employ any other person or persons to finish the work, and to provide the materials therefor; and in case of such discontinuance of the employment of the Contractor ——— shall not be entitled to receive any further payment under this contract until the said work shall be wholly finished, at which time, if the unpaid balance of the amount to be paid under this contract shall exceed the expense incurred by the Owner in finishing the work, such excess shall be paid by the Owner to the Contractor ; but if such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner . The expense incurred by the Owner as herein provided, either for furnishing materials or for finishing the work, and any damage incurred through such default, shall be audited and certified by the Architect , whose certificate thereof shall be conclusive upon the parties.

ART. VI. The Contractor shall complete the several portions, and the whole of the work comprehended in this agreement by and at the time or times hereinafter stated to wit: ———

ART. VII. Should the Contractor be delayed in the prosecution or completion of the work by the act, neglect or default of the Owner , of the Architect , or of any other contractor employed by the Owner upon the work, or by any damage caused by fire, lightning, earthquake, cyclone or other casualty for which the Contractor ——— not responsible, or by strikes or lockouts caused by acts of employes, then the time herein fixed for the completion of the work shall be extended for a period equivalent to the time lost by reason of any or all the causes aforesaid, which extended period shall be determined and fixed by the Architect ; but no such allowance shall be made unless a claim therefor is presented in writing to the Architect within forty-eight hours of the occurrence or such delay.

ART. VIII. The Owner agree to provide all labor and materials essential to the conduct of this work not included in this contract in such manner as not to delay its progress, and in the event of failure so to do, thereby causing loss to the Contractor , agree that ——— will reimburse the Contractor for such loss; and the Contractor agree that if ——— shall delay the progress of the work so as to cause loss for which the owner shall become liable, then ——— shall reimburse the Owner for such loss. Should the Owner and Contractor fail to agree as to the amount of loss comprehended in this Article, the determination of the amount shall be referred to arbitration as provided in Art. XII of this contract.

ART. IX. It is hereby mutually agreed between the parties hereto that the sum to be paid by the Owner to the Contractor for said work and materials shall be ——— subject to additions and deductions as hereinbefore provided, and that such sum shall be paid by the Owner to the Contractor , in current funds, and only upon certificates of the Architect , as follows: ———

The final payment shall be made within ——— days after the completion of the work included in this contract, and all payments shall be due when certificates for the same are issued.

If at any time there shall be evidence of any lien or claim for which, if established, the Owner of the said premises might become liable, and which is chargeable to the Contractor , the Owner shall have the right to retain out of any payment then due or thereafter to become due an amount sufficient to completely indemnify ——— against such lien or claim. Should there prove to be any such claim after all payments are made, the Contractor shall refund to the Owner all moneys that the latter may be compelled to pay in discharging any lien on said premises made obligatory in consequence of the Contractor default.

ART. X. It is further mutually agreed between the parties hereto that no certificate given or payment made under this contract, except the final certificate or final payment, shall be conclusive evidence of the performance of this contract, either wholly or in part, and that no payment shall be construed to be an acceptance of defective work or improper materials.

ART. XI. The Owner shall during the progress of the work maintain insurance on said work, in ——— own name and in the name of the Contractor , against loss or damage by fire, lightning, earthquake, cyclone or other casualty. The policies to cover all work incorporated in the building, and all materials for the same in or about the premises, and shall be made payable to the parties hereto, as their interest may appear.

ART. XII. In case the Owner and Contractor fail to agree in relation to matters of payment, allowance or loss referred to in Arts. III or VIII of this contract, or should either of them dissent from the decision of the Architect referred to in Art. VII of this contract, which dissent shall have been filed in writing with the Architect within ten days of the announcement of such decision, then the matter shall be referred to a Board of Arbitration consisting of ——— in behalf of the Owner , and ——— in behalf of the Contractor , these two to select a third. The decision of any two of this Board shall be final and binding on both parties hereto. In event of the death or inability to serve of the party named in behalf of the Owner , then the Owner shall select a person in his place; in event of the death or inability to serve of the party named in behalf of the Contractor , then the Contractor shall select a person in his place; in event of the death or inability to serve of the third party, then the remaining arbitrators shall choose a person in his place. Each party hereto shall pay one-half of the expense of such reference.

ART. XIII. The said parties for themselves, their heirs, successors, executors, administrators and assigns, do hereby agree to the full performance of the covenants herein contained.

IN WITNESS WHEREOF, The parties to these presents have hereunto set their hands and seals, the day and year first above written.

In Presence of

ROOFING TIN SPECIFICATION.

A sample specification for flat roofing tin that should be valuable to architects generally and therefore worthy of reproduction in these pages has been received from the American Sheet & Tin Plate Co. It was prepared by Mr. John McIlroy, of J. D. McIlroy & Sons, of Pittsburg, one of the most experienced roofers in the country.

Flat Seam Roof. First: Use tin of good quality; see that the tin is square; notch corners 1 inch; turn ¼ inch edge; use seven nails or cleats to the sheet; hammer smooth with mallet; flux with rosin, using plenty rosin; solder with hot soldering copper, soldering on top of seam and soak the solder well into seam; use on IC tin 5 pounds of ½ by ½ solder, on IX tin 6 to 7 pounds per square. See that the rosin is well cleaned off after the roof is finished; then give the roof one coat of paint made of pure English venetian red or pure oxid of iron and pure boiled linseed oil and a little turpentine; in thirty to ninety days a second coat of the same paint, or good graphite, using in each case only linseed oil for a thinner; in one year a third coat; after that you will be required to paint only once in every three or four years. We take no stock in painting under side of flat seam roof. If the sheeting boards are not tongued and grooved, there should first be put on a layer of dry felt paper to exclude the air from cracks and points and to prevent nail heads from coming in contact with tin roof. If the sheeting boards are old and dry, 20 by 28 inch plates are preferable; if the sheeting boards are wet and green, 14 by 20 inch plates are preferable. Twenty by 28 inch sheets will give you an average measurement on roofs of 385 feet per case, 112 sheets 20 by 28 inches. Average measurement on roof 14 by 20, 112 sheets 187 feet to box.

Standing Seam Roof. Have the tin square; notch corners for seams a little to ease the bending of the several layers; allow ½ inch for cross seams; solder well; put tin in straight rolls 20 inches wide; use 1¼ and 1½ inch tongs for side or standing seams; cleat every 12 inches, two nails to cleat; be sure to have your seam perfect; never put a standing seam roof on where you have less than 1½-inch fall to the foot; paint the same as flat seam roof. In standing seam roofs always put a layer of dry felt paper on roof before laying tin. It will exclude the air from seams and will prevent nail heads in sheeting from coming in contact with the tin. You will have an average of 352 feet per box of 112 sheets, 20 by 28 inch tin. If the above directions are followed, you will have no trouble, provided a good quality of tin is used. We can show roofs now which have been exposed thirty-five to forty-five years and are still intact.

MOSAICS.

MR. R. LANDON COLE in the journal of the R. I. B. A. draws attention to the oldest building law discovered, which is the building law of Babylon 2258 B. C. In their simplicity they suggest the removal of some of the complications that make rather obtuse some of our recent legislation on the same subject. They are as follows: "If a builder builds a house for a man and completes it, he shall pay two shekels of silver for each sar of surface." "If a builder build a house for a man and has not made his work strong and the house has fallen in and killed the owner of the house, then that builder shall be put to death." "If it kill the son of the owner of the house the son of that builder they shall put to death." "If it kill the slave of the owner of the house a slave equivalent to that slave to the owner of the house he shall give." "If the property (or 'furniture') of the owner of the house is destroyed, whatever it destroys he shall make good, and as regards the house he built and it fell, with his own property he shall rebuild the ruined house." "If he build a house for a man and did not set his work and the walls topple over, that builder from his own money shall make that wall strong."

OUR ILLUSTRATIONS.

Transportation Building, World's Fair, St. Louis, Missouri.

Entrance view, Leland Stanford University, Palo Alto, California.

Depot at Fresno, California, for Atchison, Topeka & Santa Fe Railway.

Detail of Statuary, Education Building, World's Fair, St. Louis, Missouri.

Leland Stanford Memorial Chapel, Palo Alto, California, Clinton Day, architect. Four views, exterior and interior are shown.

State Buildings, World's Fair, St. Louis, Missouri. The following are shown: Wisconsin, Connecticut, Arkansas, Louisiana, Nevada, New Jersey.

Photogravure Plate: The Bartlett Gymnasium, University of Chicago. Shepley, Rutan & Coolidge, architects.

PHOTOGRAVURE PLATES.

Issued only with the Photogravure Edition.

Residence, Toledo, Ohio. G. S. Mills, architect.

Residence, East Liberty, Pittsburg, Pennsylvania.

Carnegie Library, San Jose, California. Wm. Binder, architect.

Residence, Los Angeles, California. John Parkinson, architect.

Union Station for Southern Pacific Railroad and Oregon Navigation Company, Portland, Oregon. Van Brunt & Howe, architects.

Bartlett Gymnasium, University of Chicago. Shepley, Rutan & Coolidge, architects. Detail of Entrance and an interior view are shown.

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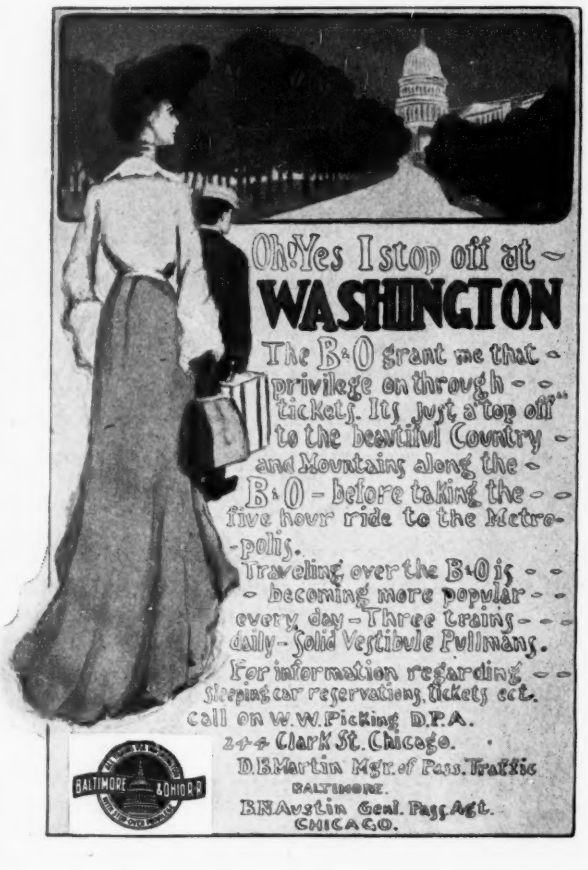
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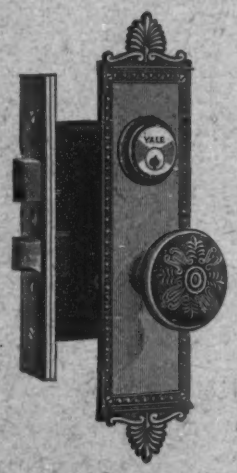

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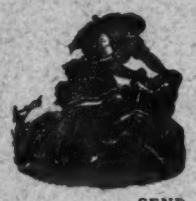

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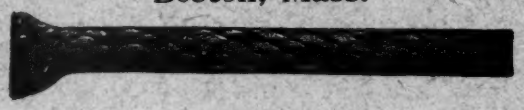

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